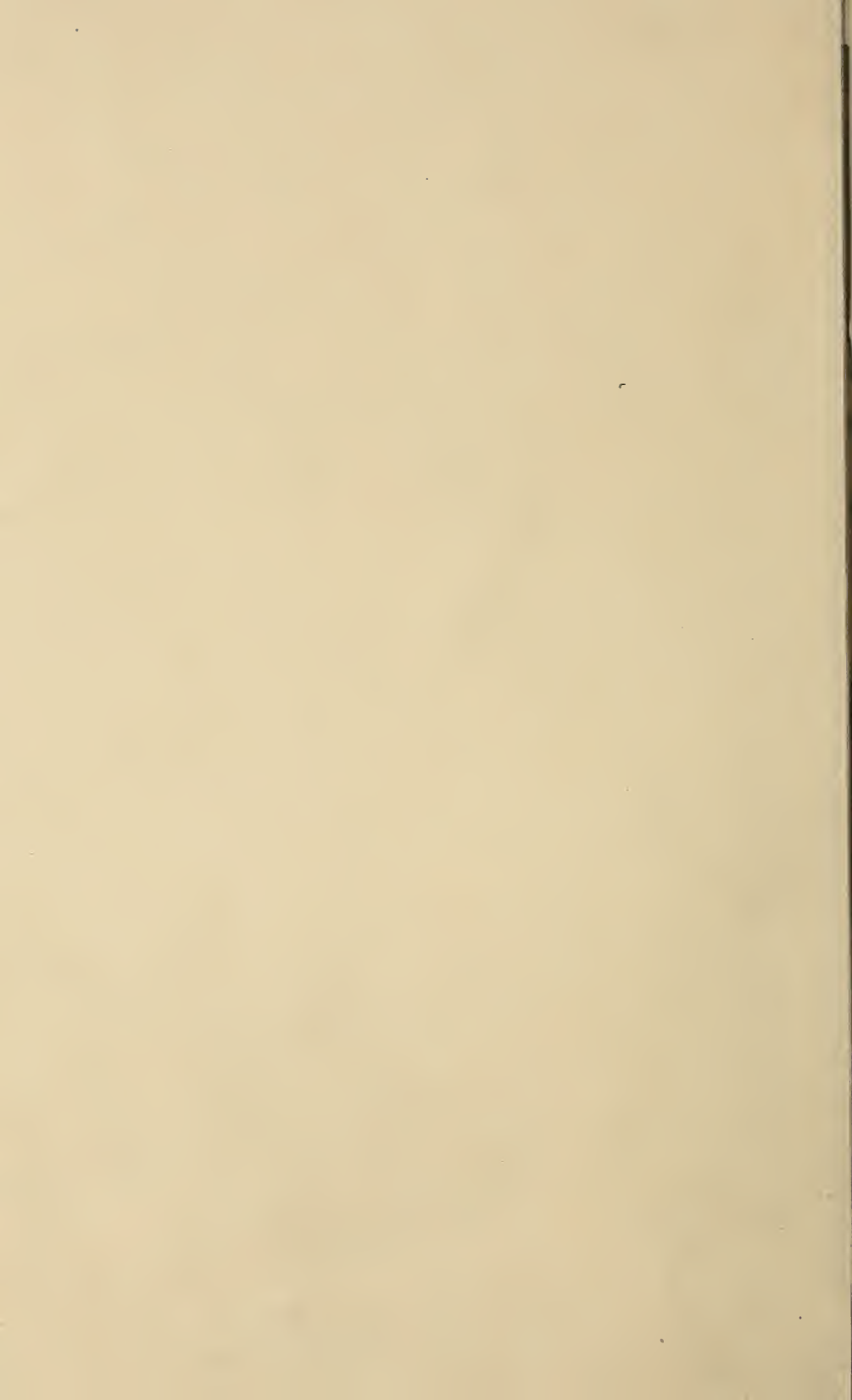


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# Porto Rico Agricultural Experiment Station.

D. W. MAY, Special Agent in Charge.

CIRCULAR NO. 7.

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## CONTROL OF THE BROWN ANT

(*Solenopsis geminata*, Fab.)

AND THE

## MEALY BUG

(*Pseudococcus citri*, Risso)

## IN PINEAPPLE PLANTATIONS.

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The brown ant and the mealy bug are at present doing considerable damage to pineapples. The brown ant alone seldom does any real damage: it is when it accompanies the mealy bug that the destructive work begins.

These ants are always found where mealy bugs are present, not eating the plants themselves, but attending the mealy bugs, carrying them from place to place, distributing them over the new leaves and, as a reward for their labor, obtaining the honey dew which is secreted by the mealy bug. A few cases have been observed where the mealy bugs were so numerous that they irritated the fruit to such an extent that the juice began to run. This was eaten by the ants and they then continued to eat into the fruit, puncturing it and getting more of the juice. Some of these fruits were packed and shipped to New York, while others were kept at the Station. The fruits shipped to New York broke down and were unsalable. On examining a number of fruits after ten days, which is equal to the time elapsed in shipping, it was found that a fungus had gained entrance through these minute holes, causing the pines to break down.

## LOCATION OF ANTS' NESTS.

Ants generally attack the outer rows of plants first, gradually working in towards the center of the patch. The outer rows and borders of a pineapple field should be carefully watched and all ant hills destroyed as soon as found.

The nests of the brown ant are found in almost any part of the pineapple plantation; around the base of the plants, under the roots between the rows and in the paths, but more often they are found around the roots of the plant. When the nest is under the plant, the ants often carry sand and earth up into the plants and build other nests in leaf axils.

Upon examining these nests a great many mealy bugs are to be found. These are tended by the ants and distributed by them over the young leaves, and from plant to plant.

Before the flower stalk develops, the mealy bugs are found on the leaves around the center of the plant, especially between young leaves which are very close together, as these afford better protection for the insect. On fruiting plants, the mealy bugs are found on the flower stalk, also around the base of the fruit, and very often on the fruit itself.

## NOTES ON SPRAYING.

Kerosene emulsion, with a small amount of crude carbolic acid, has given the most satisfactory results in killing the mealy bugs and the ants.

### Formula for Spraying Pineapples.

2 gallons of kerosene  
1 pint of crude carbolic acid,  
 $\frac{1}{2}$  pound Fairbank's Blue Cloud Soap,  
1 gallon of water.

First put the oil in a barrel. Then dissolve the soap in the water with the carbolic acid by boiling, and pour into the barrel. Mix the whole with a spray pump by pumping back into the barrel for half an hour. A creamy mixture will be obtained which should hold up for from two to three weeks. This is to be used as a stock emulsion. Use 1 gallon of stock emulsion to 18 gallons of water.

## ANTS' NESTS UNDER PLANTS.

When there is an ants' nest directly under and around the plant, it is best to spray the nest first. If this is not done, the first drops of spray falling from the plant will startle the ants

and they will immediately begin to move out carrying their young with them, and in this way many will escape the spray. When the nest is large, it is suggested that it be sprayed and then broken up with the nozzle, forcing the spray down into the nest. In this way few ants have a chance to escape, but, as many of them are away feeding at the time, it is necessary to spray again the next day when the remaining ants will be busy building a new nest. This new nest is built close to the old one. All nests in the paths and between banks should be treated in the above manner.

An extension rod about three feet long is very handy in spraying pines, and an elbow is also advised so that the spray may readily be turned down between the leaves.

There is a time in the life of the pineapple plant when it should not be sprayed, that is, when the fruit bud is forming. At this time the bud is very delicate and any spray which will kill the mealy bug or ant, is liable to injure the bud. The spray does not always kill the blossom, but the fruit may develop without a top or crown. Fruits which have formed and stopped blossoming may be sprayed, but great care should be taken.

As the mealy bug is found between the central or the new leaves of the pine, a nozzle which throws a fine but forcible spray is ideal. The nozzle should not throw a spray which spreads over a great area, but one which can be directed down between the leaves, reaching a depth of eight inches and not spreading over an area of more than four inches. It is not the amount of spray that kills, but the spray that hits the mealy bug with force enough to remove the mealy coat and thus saturate the skin of the insect.

As the heart leaves of a pineapple are very small and lay very close to the next set of leaves, it is recommended that the nozzle be placed against one of the second row of leaves, thus spraying the outside of the heart leaf and the inside of the next leaf at the same time. There are generally three sets of these leaves which come together in the above manner. It may seem impracticable to spray in this way, but, if the nozzle is not inserted between the heart leaves, the mealy bug will not be killed. To spray in this way takes a little longer than filling the crown, but after one has become accustomed to the work, it can be done very quickly.

When pines are sprayed in this manner the emulsion runs down over the central portion of the plant, filling up the crown and gradually running down around the roots.

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